Intelligently HD Mixer Insertion Matrix

User Manual

TS-9208H
TS-9216H
TS-9232H

Before using the system, please read this manual first

1. Important safety notes and attention points

◆ This machine can be used under AC~110-240V,50/60Hz

◆ In order to decrease the risk of fire and electrical shock, please do not use the machine under rain or moisture condition.

◆ Don't place the line detector in direct sunlight or near the heat source.

◆ Do not dismantle the line detector shell, and touching the chassis parts may result in electric shock and damage within the circuit detector, such machine maintenance and adjustment, please contact the designated dealers.

◆ Line detector internal components are informal touched may be brought severe electric shock accidents and damage line inspection Sensors, the company is not responsible for this.

◆ When found abnormal smell or smoke, please immediately cut off the power and unplug the power plug, stop use and ask for professional help.

◆ With line detector microprocessor, pls do not switch machine open or close very fast.

◆ If you have any question, please contact the dealer as soon as possible.

2. Function Introduction

◆ TS-9208H/TS-9216H/TS-9232H Professional mixed cross point matrix switcher is a flexible configuration matrix switcher for signals. Using high-performance hardware design, which perfectly support all kinds of high-definition digital/analog signal switching process, and support two-way RS-232, distribution of IR signal switching function. It can used for many of the video industry and the switch control signal processing one-stop solution, can be widely used in radio and television engineering, multimedia conference room, large screen display, television teaching, command and control center and other places.

◆ TS-9208H/TS-9216H/TS-9232H mixed matrix switcher provide HDMI, DVI, VGA, CVBS, S-Video, YPbPr local direct input signal, as well as the HDMI, DVI direct output. In addition, also provide twisted-pair cable input/output interface card. Cooperate with the twisted-pair transmitter can be extended by the input and output signal through twisted-pair transmission distance up to 100m, And also provide Fiber input/output interface card which with optical fiber transmission through a single core multimode optical fiber can extend the input and output signal transmission distance up to 300 m. What's more, it can be replaced for the use of single mode optical fiber transmission of single-mode transceiver transmission to improve the distance to 20 km. Advanced digital signal processing technology can guarantee the undistorted signal processing and the best quality images to be sent to the display terminal.

◆ Through custom configuration of the same or different input/output card can be composed of a single interface type matrix of one or more interface types, such as optical fiber matrix, the matrix HDMI, DVI matrix, CAT5 matrix, VGA matrix, YUV matrix, S-Video matrix, Video matrix, and so on.

◆ Mixed matrix switcher offers a variety of control mode, with the crystal key panel operation, also provide 2 standard RS-232 communication interface and network port, convenient user used with all kinds of remote control equipment.

3. The product equipment

TS-9208H/TS-9216H/TS-9232H mixed matrix, may be consist of the following arbitrary input/output interface card:

◆ **Input Card**

TS-9208HR input board (8-Channel HDMI Signal Input Card)

TS-9208DR input board (8-Channel DVI Signal Input Card)

TS-9208CR input board (8-Channel Component Video Input Card)

TS-9208SR input board (8-Channel SDI Input Card)

TS-9208GR input board (8-Channel Optical Input Card)

TS-9208TR input board (8-Channel HD BaseT Input Card)

◆ **Output the board**

TS-9208HC output board (8-Channel HDMI Output Signal Card)

TS-9208DC output board (8-Channel DVI Signal Output Card)

TS-9208CC output board (8-Channel Component Video Output Card)

TS-9208SC output board (8-Channel SDI Output Card)

TS-9208GC output board (8-Channel Optical Output Card)

TS-9208TC output board (8-Channel HD BaseT Output Card)

◆ **Optional accessories**

Low blank card (file)

Low power supply box (redundant power box)

4. Product feature

◆ support COMP (component Video input interface can transfer the following signal VGA, CVBS, S-Video, YPbPr), HDMI, DVI, twisted pair (cable will), Fiber (optical Fiber) in any of the interface card input.

◆ support, DVI, HDMI, twisted pair (cable will), Fiber (optical Fiber) any of the card output.

◆ support input EDID read, custom functions.

◆ support embedded bidirectional infrared and RS-232 control signal switching functions (twisted-pair cable or fiber boards and the corresponding transmission).

◆ support is fast channel and embedded control switch signal separation model.

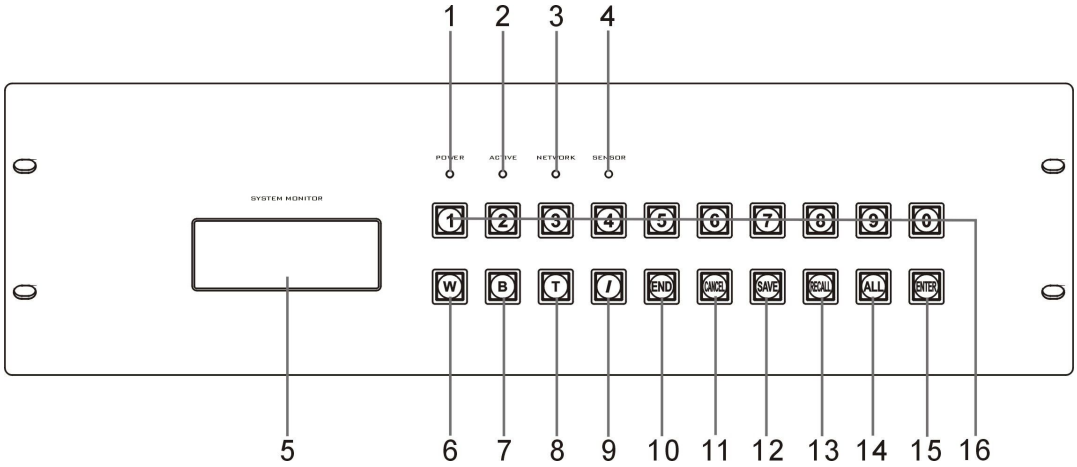
5. Crate Specifications

Model		8-channel	16-channel	32-channel	72-channel
Height		3U	5U	9U	16U
Effective card number (a/Taiwan)	Input card	1	2	4	9
	Output card	1	2	4	9
Input signal (maximum way)	TS-9208HR	8	16	32	72
	TS-9208DR	8	16	32	72
	TS-9208CR	8	16	32	72
	TS-9208SR	8	16	32	72
	TS-9208GR	8	16	32	72
	TS-9208TR	8	16	32	72
Output signal (maximum way)	TS-9208HC	8	16	32	72
	TS-9208DC	8	16	32	72
	TS-9208CC	8	16	32	72
	TS-9208SC	8	16	32	72
	TS-9208GC	8	16	32	72
	TS-9208TC	8	16	32	72

6. Nomenclature and functions

6.1 Front Panel

◆ **TS-9208H (8 channels)**



1) Power indicator light.

2) Instruction execution light.

3) A serial port to accept data light.

4) Infrared Receiver.

5) Screen.

6) Function key for switch AV / infrared/serial port at the same time. It can switch AV/infrared/serial port from one Channel to other output channels.

eg: Press “1”, “W”,”3”,”END”,”ENTER”key one after another to switch AV/Infrared/serial port on the first channel to the third output channel.

7) Switch-optioned key for AV. It can switch AV signal from one channel to other output channels.

eg: Press “3” “B” “1” “0” “END””ENTER” key to switch AV signal on the third channel to the tenth output channel.

8) Switch-option key for infrared /serial port at the same time, Which can switch infrared/serial port data from one channel to other output channels.

eg: Press “2” “T” “8” “END” “ENTER” key to switch infrared, serial port data on the second channel to the eighth output channel.

9) Command-space key. It can separate output channel port when the output is not single channel.

eg: Press “1” “B” “2” “/” “1” “/” “3” ,”END” “ENTER” key to switch the first output channel to the second ,the first and the third output channel.

10) Key for command completion. It is used to end channel option indicator.

11) Cancel key.

eg. Press “1” “B” “2” “END” key one after another, then press “CANCEL” key. Current input instruction will be can celled, Re-enter instruction can be acceptable.

12) Save key. Corresponding relation of current input and output information can be saved.

eg: Press “SAVE” key firstly, Then press”2”key to save current input and output status.

13) Invoking key, invoke corresponding relation of saved input and output.

eg: Press “Recall” key firstly to invoke saved input and output status in advance and to switch it.

14) Shortcut key, optional key for one input channel and all output channel: Function key for direct connection and turn-off function. Shortcut key would not need to use with “END” “ENTER” key.

eg 1 : Press “7”.”ALL” on after another means switch AV signal in the seventh channel to all output channels.

eg 2 :Press button ”ALL” firstly , Then press button “1” is direct connection, which means AV signal in all input channels will be transmitted to all corresponding output channels. That is

the first input channel switch to the first output channel, the second input channel switch to the second output channel, the third input channel switch to the third output channel, etc.

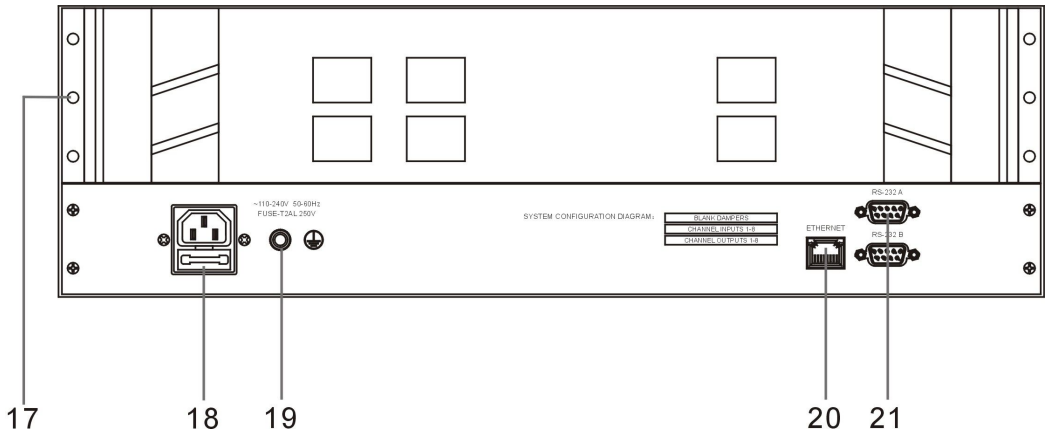
eg 3: Press "ALL" firstly, Then press "2" is turn-off function, which means turn off all the output channels.

15) Command key. Ensure switch option and execute switch.

16) "0,1 …8,9": Option Key for input and output channel. Can be used for set output and input channel of AV signal or used for opt for invoking status key or save key.

6.2 Real Panel

◆ TS-9208H (8 channels)



17) Slot for output panel and input panel.

18) AC ~110-220V 50-60Hz power input.

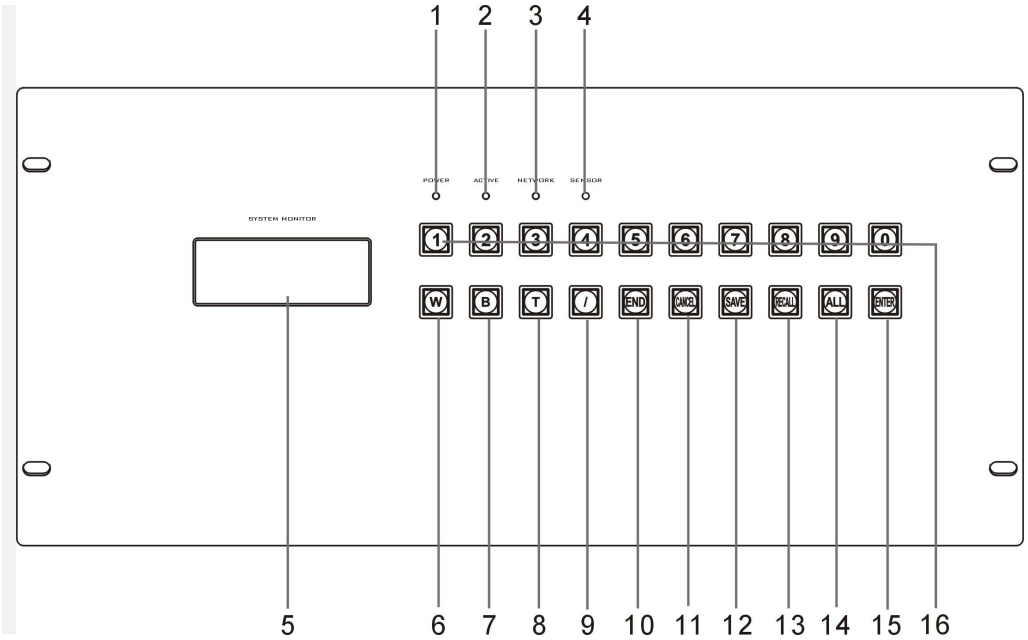
19) Ground point.

20) Ethernet Interface (RJ45 main interface).

21) Serial Control Interface.

6.3 Front Panel

◆ TS-9216H (16 channels)



1) Power indicator light.

2) Instruction execution light.

3) A serial port to accept data light.

4) Infrared Receiver.

5) Screen.

6) Function key for switch AV / infrared/serial port at the same time. It can switch AV/infrared/serial port from one Channel to other output channels.

eg: Press "1", "W","3","END","ENTER"key one after another to switch AV/Infrared/serial port on the first channel to the third output channel.

7) Switch-optioned key for AV. It can switch AV signal from one channel to other output channels.

eg: Press "3" "B" "1" "0" "END""ENTER" key to switch AV signal on the third channel to the tenth output channel.

8) Switch-option key for infrared /serial port at the same time, Which can switch infrared/serial port data from one channel to other output channels.

eg: Press "2" "T" "8" "END" "ENTER" key to switch infrared, serial port data on the second channel to the eighth output channel.

9) Command-space key. It can separate output channel port when the output is not single channel.

eg: Press "1" "B" "2" "/" "1" "/" "3" ,"END" "ENTER" key to switch the first output channel to the second ,the first and the third output channel.

10) Key for command completion. It is used to end channel option indicator.

11) Cancel key.

eg. Press "1" "B" "2" "END" key one after another, then press "CANCEL" key. Current input instruction will be can celled, Re-enter instruction can be acceptable.

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13) Invoking key, invoke corresponding relation of saved input and output.

eg: Press "Recall" key firstly to invoke saved input and output status in advance and to switch it.

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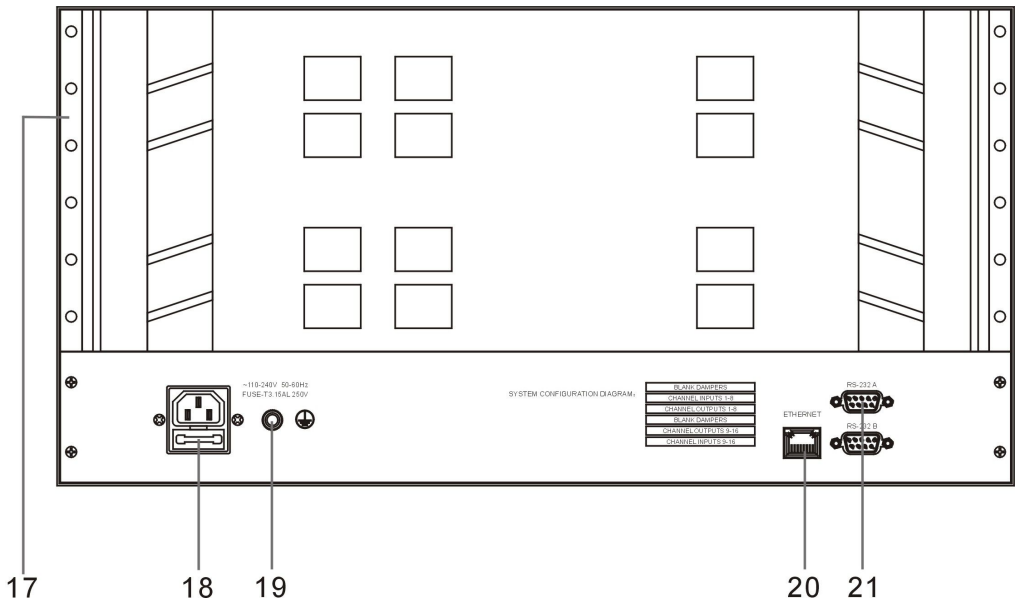
15) Command key. Ensure switch option and execute switch.

16) "0,1 …8,9": Option Key for input and output channel. Can be used for set output and input channel of AV signal or used for opt for invoking status key or save key.

6.4 Real Panel

◆ TS-9216H (16 channels)



17) Slot for output panel and input panel.

18) AC ~110-220V 50-60Hz power input.

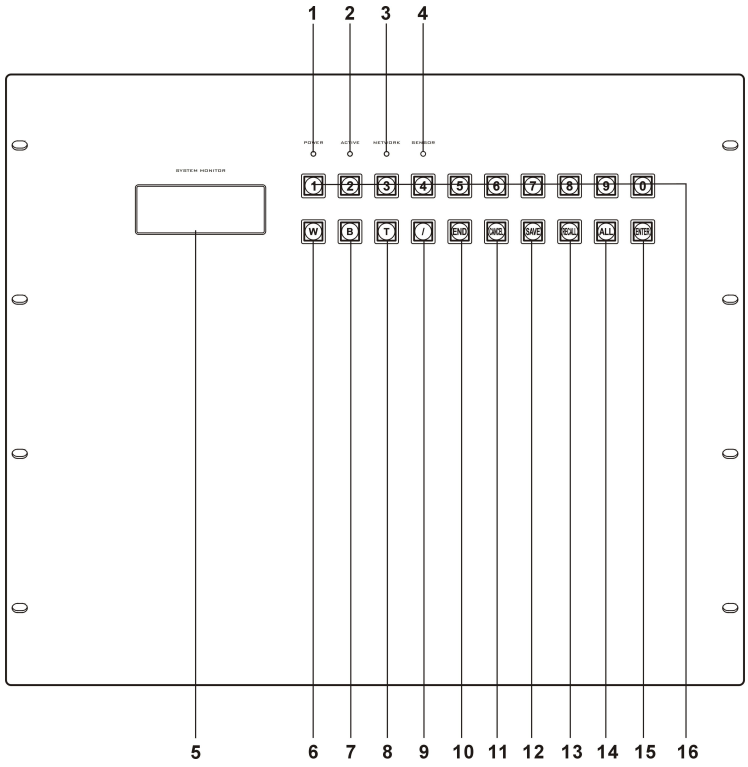
19) Ground point.

20) Ethernet Interface (RJ-45main interface).

21) Serial Control Interface.

6.5 Front Panel

◆ TS-9232H (32 channels)



1) Power indicator light.

2) Instruction execution light.

3) A serial port to accept data light.

4) Infrared Receiver.

5) Screen.

6) Function key for switch AV / infrared/serial port at the same time. It can switch AV/infrared/serial port from one Channel to other output channels.

eg: Press "1", "W","3","END","ENTER"key one after another to switch AV/Infrared/serial port on the first channel to the third output channel.

7) Switch-optioned key for AV. It can switch AV signal from one channel to other output channels.

eg: Press "3" "B" "1" "0" "END""ENTER" key to switch AV signal on the third channel to the tenth output channel.

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eg: Press “2” “T” “8” “END” “ENTER” key to switch infrared, serial port data on the second channel to the eighth output channel.

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eg: Press “1” “B” “2” “/” “1” “/” “3” ,”END” “ENTER” key to switch the first output channel to the second ,the first and the third output channel.

10) Key for command completion. It is used to end channel option indicator.

11) Cancel key.

eg. Press “1” “B” “2” “END” key one after another, then press “CANCEL” key. Current input instruction will be can celled, Re-enter instruction can be acceptable.

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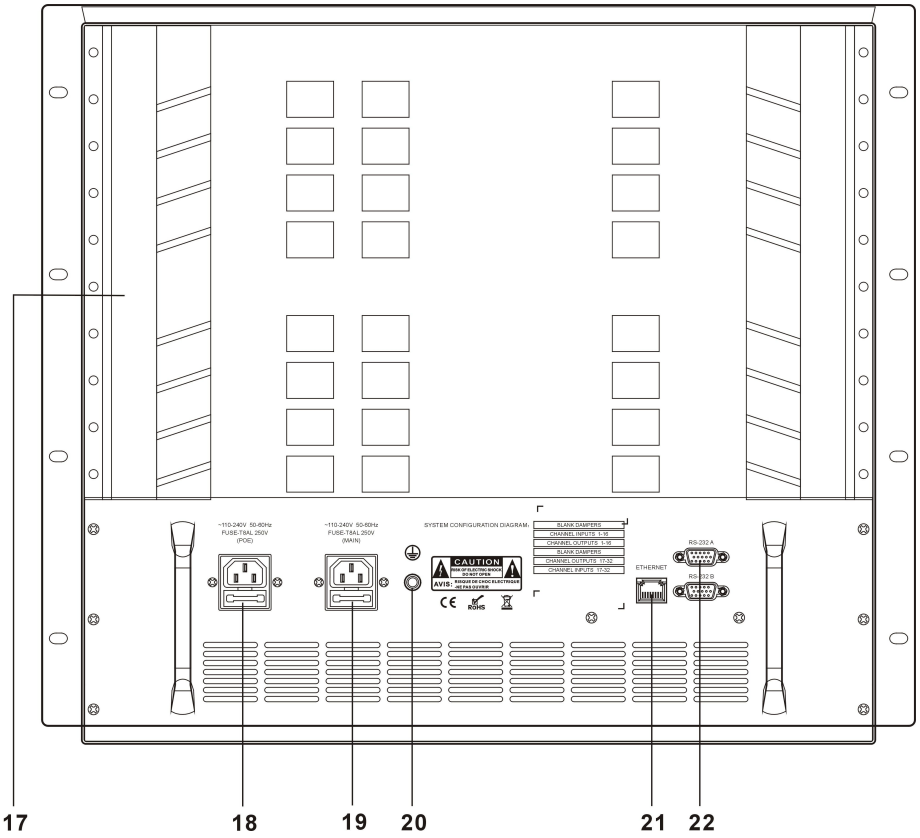
eg 3: Press “ALL” firstly, Then press “2” is turn-off function, which means turn off all the output channels.

15) Command key. Ensure switch option and execute switch.

16) “0,1 …8,9”: Option Key for input and output channel. Can be used for set output and input channel of AV signal or used for opt for invoking status key or save key.

6.6 Real Panel

◆ TS-9232H (32 channels)



17) Slot for output panel and input panel.

18) AC ~110-220V 50-60Hz power input.

19) ~110-220V 50-60Hz main power input.

20) Ground point.

21) Ethernet Interface (RJ-45main interface).

22) Serial Control Interface.

7. serial port instruction control

It tests machine by PC series port, connect the test sample by the serial port cable,set PC series port test machine's Baud rate to be 9600bps, data:8bits, stop:1bit, correction digit: w/o, flow control: w/o. serial port instructions are design to offer the control for center control system. It can be connected PC to internet access for internet testing , set same serial port instruction, network parameter could be defined by the serial port instruction.

8. Instruction operation

Instruction character description:

[X1],[X2], … ,[Xn] means the corresponding input port

[Y1],[Y2], … ,[Yn] means the corresponding output port

[TX1],[TX2], … ,[TXn] means the corresponding input series port/IR transmition channel

[RX1], [RX2], … , [RXn] means the corresponding input series port/IR reception channel

[TY1] ,[TY2], … , [TYn] means the corresponding output series port/IR transmition channel

[RY1] , [RY2], … ,[RYn] means the corresponding output series port/IR reception channel

n is the device's input/output ports quantity, eg: TS-9232H,n max 32.

9. Instructions Description

9.1 Build the instruction connection

ASCII Instruction (PC to matrix)	Function	Return (matrix to PC)	Example
build the single channel connection			
[X1]V[Y1].	audio and video input[X1] connect to audio and video output[Y1]	AV:[X1]->[Y1]	1V1.
[X1]A[Y1].	audio and video input [X1] connect to audio and video output [Y1]	AV:[X1]->[Y1]	1A1.
[X1]B[Y1].	audio and video input [X1] connect to audio and video output [Y1]	AV:[X1]->[Y1]	1B1.
[RX1]R[TY1].	input port reception channel [RX1] connect to output port transmition channel [TY1] (RS232 forward direction switch)	RS:[RX1]->[TY1]	1R1.
[RX1]Q[TY1].	input IR reception channel [RX1] connect to output IR transmition channel [TY1] (IR forward direction switch)	IR:[RX1]->[TY1]	1Q1.
[RX1]T[TY1].	input port/IR reception channel [RX1] connect to output port/IR transmition channel [TY1] (RS232/IR forward and reverse direction switch)	RS:[RX1]->[TY1] IR:[RX1]->[TY1]	1T1.
[X1]W[Y1].	audio and video input [X1] connect to audio and video output [Y1], input port/IR reception channel [RX1] connect to output port/IR transmition channel [TY1] (AV forward direction , RS232/IR forward and reverse direction switch)	AV:[X1]->[Y1] RS:[RX1]->[TY1] IR:[RX1]->[TY1]	1W1.
[RY1]~R[TX1].	output C reception channel [RY1] connect to input port transmition channel [TX1] (RS232 reverse direction switch)	~RS: [RY1]->[TX1]	1~R2.
[RY1]~Q[TX1].	output IR reception channel [RY1] connect to input IR transmition channel [TX1] (IR reverse direction switch)	~IR: [RY1]->[TX1]	1~Q2.
[RY1]~T[TX1].	output port/IR reception channel	~RS:	1~T2.

	[RY1] connect to input port/IR transmition channel [TX1] (RS232/IR reverse direction switch)	[RY1]->[TX1] ~IR: [RY1]->[TX1]	
[X1]*[Y1]&	audio and video input [X1] connect to audio and video output [Y1]	AV:[X1]->[Y1]	1*1&
[X1]*[Y1]%	audio and video input [X1] connect to audio and video output [Y1]	AV:[X1]->[Y1]	1*1%
[X1]*[Y1]$	audio and video input [X1] connect to audio and video output [Y1]	AV:[X1]->[Y1]	1*1$
[X1]*[Y1]!	audio and video input [X1] connect to audio and video output [Y1]	AV:[X1]->[Y1]	1*1!
[X1]#.	audio and video input [X1] connect to audio and video output [Y1]; input port/IR reception channel [RX1] connect to output port/IR transmition channel [TY1]; output port/IR reception channel [RY1] connect to input port/IR transmition channel [TY1]	[X1] A/V/R/I Through.	1#.

Quickly to build multi channels connection			
[X1]V[Y1],[Y2]···,[Yn]	Single AV input [X1] connect to multi AV output [[Y1],[Y2],⋯,[[Yn]	AV:[X1]->[Y1] AV:[X1]->[Y2] … AV:[X1]->[Yn]	1V1,2,3.
[X1]A[Y1],[Y2]···,[Yn]	Single AV input [X1] connect to multi AV output [[Y1],[Y2],⋯,[[Yn]	AV:[X1]->[Y1] AV:[X1]->[Y2] … AV:[X1]->[Yn]	1A1,2,3.
[X1]B[Y1],[Y2]···,[Yn]	Single AV input [X1] connect to multi AV output [[Y1],[Y2],⋯,[[Yn]	AV:[X1]->[Y1] AV:[X1]->[Y2] … AV:[X1]->[Yn]	1B1,2,3.
[RX1]R[Y1],[Y2]⋯,[Yn]	Single input serial port receive channel [RX1] connect to multi output of serial port transmit channels [[TY1],[TY2],⋯,[[TYn] (RS232 switch to multi channels at forward direction)	RS:[RX1]->[TY1] RS:[RX1]->[TY2] … RS:[RX1]->[RYn]	1R1,2,3.
[RX1]Q[Y1],[Y2]⋯,[Yn]	Single input infrared receive channel [RX1] connect to multi	IR:[RX1]->[TY1] IR:[RX1]->[TY2]	1Q1,2,3.

	output of infrared transmit channels [[TY1],[TY2],⋯,[[TYn] (IR switch to multi channels at forward direction)	⋯ IR:[RX1]->[RYn]	
[RX1]Q[Y1],[Y2]⋯,[Yn]	Single input serial port/infrared receive channel [RX1] connect to multi output of serial port/infrared transmit channels ([TY1],[TY2],⋯,[[TYn] (RS232/IR switch to multi channels at forward direction)	RS:[RX1]->[TY1] IR:[RX1]->[TY1] RS:[RX1]->[TY2] IR:[RX1]->[TY2] ⋯ RS:[RX1]->[RYn] IR:[RX1]->[RYn]	1T1,2,3.
[X1]W[Y1],[Y2]⋯, [Yn]	Single AV input [X1] connect to multi channels AV output [[Y1],[Y2],⋯,[[Yn] Single input serial port/infrared receive channel [RX1] connect to multi output of serial port/infrared transmit channels [[TY1],[TY2],⋯,[[TYn] (AV/RS232/IR switch to multi channels)	AV:[X1]->[Y1] RS:[RX1]->[TY1] IR:[RX1]->[TY1] AV:[X1]->[Y2] RS:[RX1]->[TY2] IR:[RX1]->[TY2] ⋯ AV:[X1]->[Yn] RS:[RX1]->[RYn] IR:[RX1]->[RYn]	1W1,2,3
[RY1]~R[TX1],[TX2]⋯, [TYn]	Single output serial port receive channel [RY1] connect to multi input of serial port transmit channels [[TX1],[TX2],⋯,[[TXn] (RS232 switch to multi channels at reverse direction)	~RS:[RY1]->[TX1] ~RS:[RY1]->[TX2] ⋯ ~RS:[RY1]->[RXn]	1~R1.,2,3
[RX1]Q[Y1],[Y2]⋯, [Yn]	Single output infrared receive channel [RY1] connect to multi input of infrared transmit channels [[TX1],[TX2],⋯,[[TXn] (IR switch to multi channels at reserve direction)	~IR:[RY1]->[TX1] ~IR:[RY1]->[TX2] ⋯ ~IR:[RY1]->[RXn]	1~Q1,2,3.
[RX1]Q[Y1],[Y2]⋯, [Yn]	Single output serial port/infrared receive channel [RY1] connect to multi input of serial port/infrared transmit channels [[TX1],[TX2],⋯,[[TXn] (RS232/IR switch to multi channels at reserve direction)	~RS:[RY1]->[TYX] ~IR:[RY1]->[TX1] ~RS:[RY1]->[TX2] ~IR:[RY1]->[TX2] ⋯ ~RS:[RY1]->[RXn] ~IR:[RY1]->[RXn]	1~T,1,2,3.
[X1] All	Single AV input [X1] connect to all the AV output, Single input serial port/infrared receive channel [RX1] connect to	[X1] A/V/R/1 To All	1 All

	all the output of serial port/infrared transmit channels [Yn]		
[X1],[X2]…, [Xn] #.	Multi AV input [X1] [X2],…,[[Xn] one-to-one connect to multi AV output [[Y1],[Y2],…,[[Yn], Multi input serial port/infrared receive channel [RX1],[RX2],…,[[RXn] one-to-one connect to multi output of serial port/infrared transmit channels ([TY1],[TY2],…,[[TYn], Multi output serial port/infrared receive channel [RY1],,[RY2],…,[[RYn] one-to-one connect to multi input channels of serial port/infrared transmit channels [[TX1],[TX2],…,[[TXn]	[X1] A/V/R/1 Through, [X2] A/V/R/1 Through, … [Xn] A/V/R/1 Through	1,2,3#
All#	All the AV input [Xn] one-to-one connect to all the AV output, All the input of serial port/infrared receive channels [RXn] one-to-one connect to all the output of serial port/infrared transmit channels [[TYn], All the output of serial port/infrared receive channels [RYn] one-to-one connect to all the input of serial port/infrared transmit channels [[TX1],[TX2],…,[[TXn]	All A/V/R/1 Through	All#

Noted: All the switch instructions could be transmitted at the same time by multiple of all kinds, for example (1V1,1R1,1Q2.2~R1), they would be executed one by one from the matrix cache.

9.2 Close the instruction connection

ASCII command(from PC to matrix)	Command function	Return(from matrix to PC)	Example
Close single way connection			
0V[Y1].	Close one way AV output [Y1]	B:OFF->[Y1]!	0V1.
0A[Y1].	Close one way AV output [Y1]	B:OFF->[Y1]!	0A1.
0B[Y1].	Close one way AV output [Y1]	B:OFF->[Y1]!	0B1.
0R[TY1].	Close one way output serial port dispatching channel [TY1]	RS:OFF->[TY1]!	0R1.
0Q[TY1].	Close one way output infrared dispatching channel [TY1]	IR:OFF->[TY1]!	0Q1.
0T[TY1].	Close one way output serial port/ infrared dispatching channel [TY1]	RS:OFF->[TY1]! IR:OFF->[TY1]!	0T1.
0W[Y1].	Close one way AV output [Y1] and output serial port infrared dispatching channel [TY1]	B:OFF->[Y1]! RS:OFF->[TY1]! IR:OFF->[TY1]!	0W1.
0~R[TX1].	Close one way input serial port dispatching channel [TX1]	~RS:OFF->[TX1]!	0~R1.
0~Q[TX1].	Close one way input infrared dispatching channel [TX1]	~IR:OFF->[TX1]!	0~Q1.
0~T[TX1].	Close one way input serial port / infrared dispatching channel [TX1]	~RS:OFF->[TX1]! ~IR:OFF->[TX1]!	0~T1.
0*[Y1]&	Close one way AV output [Y1]	B:OFF->[Y1]!	0*1&
0*[Y1]%	Close one way AV output [Y1]	B:OFF->[Y1]!	0*1%
0*[Y1]$	Close one way AV output [Y1]	B:OFF->[Y1]!	0*1$
0*[Y1]!	Close one way AV output [Y1]	B:OFF->[Y1]!	0*1!
[Y1]$.	Close one way AV output [Y1]	B:OFF->[Y1]!	1$.
Quickly to Close single way connection			
[Y1],[Y2],…, [Yn]$.	Close multi channel AV output [Y1],[Y2],…,[Yn]	B:OFF->[Y1]! B:OFF->[Y2]! … B:OFF->[Yn]!	1,2,3$.
[TY1],[TY2],…, [TYn]R$.	Close multi channel output serial port dispatching channel [TY1],[TY2],…, [TYn]	RS:OFF->[TY1]! RS:OFF->[TY2]! … RS:OFF->[TYn]!	1,2,3R$.
[TY1],[TY2],…, [TYn]Q$.	Close multi channel output port infrared dispatching channel [TY1],[TY2],…, [TYn]	IR:OFF->[TY1]! IR:OFF->[TY2]! … IR:OFF->[TYn]!	1,2,3Q$.

[TY1],[TY2],…, [TYn]T$.	Close multi channel output serial port / infrared dispatching channel [TY1],[TY2], …,[TYn]	RS:OFF->[TY1]! IR:OFF->[TY1]! RS:OFF->[TY2]! IR:OFF->[TY2]! … RS:OFF->[TYn]! IR:OFF->[TYn]!	1,2,3T$.
[Y1],[Y2],…, [Yn]W$.	Close multi channel AV output [Y1],[Y2],…,[Yn] Close multi channel output serial port / infrared dispatching channel [TY1],[TY2],…,[TYn]	B:OFF->[Y1]! RS:OFF->[TY1]! IR:OFF->[TY1]! B:OFF->[Y2]! RS:OFF->[TY2]! IR:OFF->[TY2]! … B:OFF->[Yn]! RS:OFF->[TYn]! IR:OFF->[TYn]!	1,2,3W$.
[TX1],[TX2],…, [TXn]~R$.	Close multi channel input serial port dispatching channel [TX1],[TX2],…, [TXn]	RS:OFF->[TX1]! RS:OFF->[TX2]! … RS:OFF->[TXn]!	1,2,3~R$.
[TX1],[TX2],…, [TXn]~Q$.	Close multi channel input infrared dispatching channel [TX1],[TX2],…,[TXn]	IR:OFF->[TX1]! IR:OFF->[TX2]! … IR:OFF->[TXn]!	1,2,3~Q$.
[TX1],[TX2],…, [TXn]~T$.	Close multi channel input serial port / infrared dispatching channel [TX1],[TX2],…,[TXn]	RS:OFF->[TX1]! IR:OFF->[TX1]! RS:OFF->[TX2]! IR:OFF->[TX2]! … RS:OFF->[TXn]! IR:OFF->[TXn]!	1,2,3~T$.

9.3 Channel Connection Instructions

ASCII command(from PC to matrix)	**Command function**	**Return(from matrix to PC)**	**Example**
Status[X1][X2], …[Xn].	Inquire connection status of single channel or multi-channel video input [X1] [X2] …[Xn]	A:[X1]->[Yn] V:[X1]->[Yn] … A:[X2]->[Yn] V:[X2]->[Yn] … A:[Xn]->[Yn] V:[Xn]->[Yn] …	Status 1,2,3
Inquire[X1],[X2], …[Xn]	Inquire serial input port /Infrared data [RX1] , [RX2],…, The connection status of [RXn] and output Transmit channel [TY1],[TY2],…[TXn] and connection status of serial output port/Infrared data receiver channel [RY1] [RY2]…, [RYn] and input port transmit channel [TX1] [TX2],…[TXn] (Inquire of connection Forward and reverse channel RS232/IR)	RS:[RX1]- >[TYn] IR:[RX1]->[TYn] … RS:[RX2]- >[TYn] IR:[RX2]->[TYn] … RS:[RXn]- >[TYn] IR:[RXn]->[TYn] … ~RS:[RY1]- >[TXn] ~IR:[RY1]->[TXn] … ~RS:[RY2]- >[TXn] ~IR:[RY2]->[TXn] … ~RS:[RYn]- >[TXn] ~IR:[RYn]->[TXn] …	Inquire 1,2,3

Status.	Check all the connection situation of all audio & video frequency output	A:[X1]->[Yn] V:[X1]->[Yn] … A:[X2]->[Yn] V:[X2]->[Yn] … A:[Xn]->[Yn] V:[Xn]->[Yn] …	Status1,2, 3
Inquire.	Check all serial ports / infrared channel connection situation	RS:[RX1]->[TYn] IR:[RX1]->[TYn]	Inquire.

	(forward & reverse)	… RS:[RX2]->[TYn] IR:[RX2]->[TYn] … RS:[RXn]->[TYn] IR:[RXn]->[TYn] … ~RS:[RY1]->[TXn] ~IR:[RY1]->[TXn] … ~RS:[RY2]->[TXn] ~IR:[RY2]->[TXn] … ~RS:[RYn]->[TXn] ~IR:[RYn]->[TXn] …	

9.4 Overall Presetting Order

ASCII command(from PC to matrix)	**Command function**	**Return(from matrix to PC)**	**Example**
Save[N].	N=1,2,3,…,8. Restore all audio & video frequency/serial ports / infrared gateway connection situation to the N overall presetting	Save To F[N]	Save2.
Recall[N].	Take out the N overall presetting as the current gateway connection	Recall From F[N]	Recall2.
Clear[N].	Delete the N overall presetting	Clear F[N]	Clear2.

9.5 Safety Allocation Order

ASCII command(from PC to matrix)	**Command function**	**Return(from matrix to PC)**	**Example**
/%Lock;	Lockup control panel keyboard	System Locked!	/%Lock;
/%Unlock;	Relieve control panel	System Unlocked!	/%Unlock;

PS: panel just can be locked up or relieved by gateway order.

9.6 System Allocation Order

ASCII command(from PC to matrix)	Command function	Return(from matrix to PC)	Example
/:Bell Off;	Close buzzer warning tone	Closed The Bell.	/:Bell Off;
/:Bell On;	Open buzzer warning tone	Opened The Bell.	/:Bell On;
/:Message Off;	Close the returned information sent to computer gateway	Closed The Message Return.	/:Message Off;
/:Message On;	Open the returned information sent to computer port	Enabled The Message Return.	/:Message On;

9.7 Network Allocation Order

ASCII command(from PC to matrix)	Command function	Return(from matrix to PC)	Example
<#SPORT[5000]>	Allocate matrix network gateway number	SPORT\: [5000]	<#SPORT5000>
<#SIPR[192]. [168]. [0]. [2]>	Allocate matrix network IP	SIPR:[192].[168]. [0].[2]	<#SIPR192.168.0.2>
<#GAR [192]. [168]. [0]. [1]>	Allocate network gateway number	GAR:[192].[168]. [0].[1]	<#GAR192.168.0.1>
<#SUBR [255]. [255]. [255]. [0]>	Allocate network sub net mask	SUBR:[255].[255]. [255].[0]	<#SUBR255.255.255.0>
<# SHAR 0x[00]. 0x[11]. 0x[22]. [0x33]. [0x44]. [0x55]>	Allocate network hardware address (16B)	0x[00]. 0x[11]. 0x[22]. [0x33]. [0x44]. [0x55]>	<#SHAR0x00.0x11. 0x22.0x33. 0x44.0x55>
<#NETDEFAULT>	Network allocation recover factory value	NETDEFAULT：[OK]	<#NETDEFAULT>
	Allocate network data error	Out of range!	
	Allocate network successfully	NETSET:OK	

PS: allocate the wrong network data, will return to "Out of range!", allocate network successfully, will return to "NETSET:OK".

9.8 System Checking Order

ASCII command(from PC to matrix)	Command function	Return(from matrix to PC)	Example
/^Version;	Check matrix system version number	[X4]	/^Version;

/*Type;	Check matrix model	[X5]	/*Type;
<^SPORT>	Check current matrix network port number	SPORT:[X12]	<^SPORT>
<^SIPR>	Check current matrix IP network number	SIPR:[X12].[X13].[X14].[X15]	<^SIPR>
<^SUBR>	Check current network sub net mask number	SUBR:[X12].[X13].[X14].[X15]	<^SUBR>
<^GAR>	Check current network gateway number	GAR:[X12].[X13].[X14].[X15]	<^GAR>
<^SHAR>	Check current network hardware address number	SHAR:[X12].[X13].[X14].[X15].[X16].[X17]	<^SHAR>

9.9 Common Usage Allocation Order

ASCII command(from PC to matrix)	**Command function**	**Return(from matrix to PC)**	**Example**
Standard switch [xxx].	Switch standard work mode (xxx=255,operate all output)	STANDARDSWITCH002!	Standard switch.2
Fast switch[xxx].	Switch quick work mode (acquiescence) (xxx=255, operate all output)	FASTSWITCH002!	Fastswitch2.
[Y1]D[X1], [X2],…,[Xn].	Read monitor EDID to input port connecting output port[Y1] [X1],[X2],…,[Xn]. When output port [Y1]: 0, means recover the acquiescent EDID to the related output port input port [Xn] require the same input board, one time only can be written 8-channel (for example) (1D1,2,3,4,5,6,7,8.)	EDID-OK! (success) EDID-FAIL! (fail)	1D1,2,3,8.
WEDIDx.	Send EDID to output board, restore in EEPROM send"CONFIGEDIDCODE." Then send EDID data. Send WEDIDx. (x=1 to 8）	WEDIDx.	WEDID1.
ROUTPUTDID [Y1].	Read output port EDID to terminal	256 byte EDID，if no connection monitor, return 0	ROUTPUTDID1.
R BLOCK E DID x.	Read output board EPROM x situation EDID to terminal	256 byte EDID data	RBLOCKEDID1.
[X]WBEDID[Y]	Read output board EDID[X] to	CALLEDID[X],[Y].	2WBEDI

	input board channel [Y]		D6.
DOG: Out Mode AUTO[XXX].	Allocate output board channel to AUTO mode (xxx=255,operate all output)	DOG:Out Mode AUTO [XXX].	DOG:Out ModeAUTO7
DOG:Out Mode DVI[XXX].	Allocate output board channel to DVI mode (xxx=255, operate all output)	DOG:Out Mode DVI [XXX].	DOG:Out ModeDVI7.
DOG:Out Mode HDMI[xxx].	Allocate output board channel to HDMI mode（xxx=255, operate all output)	DOG:Out Mode HDMI [xxx].	DOG:Out ModeHDMI7 .
DOG:Deep On [xxx].	Allocate output board channel to open high color depth function (xxx=255, operate all output)	DOG:Deep On[xxx].	DOG: DeepOn7.
DOG:Deep Off [xxx].	Allocate output board channel to close high color depth function (xxx=255, operate all output)	DOG:Deep Off[xxx].	DOG: DeepOff7.

10. Network Interface Acquiescent Data

Matrix Network Port No: 5000
Matrix Network IP: 192.168.0.2
Matrix Network Gateway No: 192.168.0.1
Matrix Network Sub net Mask: 255.255.255.0
Matrix Network Hardware Add: 0x00.0x11.0x22.0x33.0x44.0x55;

PS: RST matrix system allocated network data just work.

11. Notice to switch serial ports, infrared data

◆ RS-232 & infrared operating are positive (positive: matrix input port connect RS-232 or infrared receiver side, output port connect RS-232 or infrared sending side).

◆ RS-232& infrared negative switch need the serial ports order (negative: matrix output port connect RS-232 or infrared receiver side, output port connect RS-232 or infrared sending side), the serial ports order please refer the serial ports specification.

◆ Infrared or serial ports switch (positive & negative) just can change from one channel to another one or more, cannot all channels to one channel.

12. Power supply scope test

- Test Requirements: input AC ~100-240V, measure DC voltage.
- Test Standard: debug sample machine to DC working voltage normal, function well.

13. High voltage debug

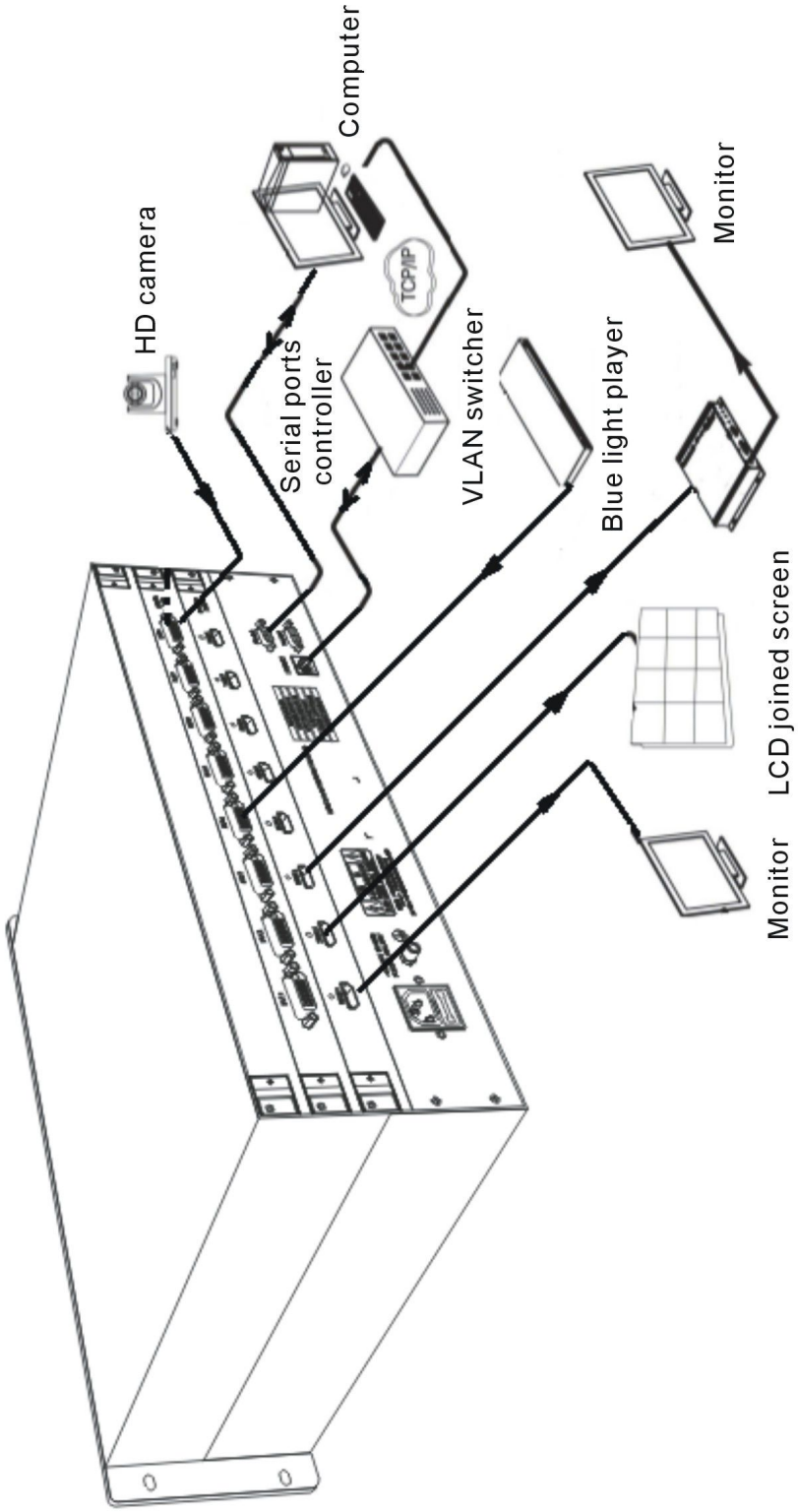
Power source L/N line add 1500V/5mA AC to floor, continue 60s, high voltage tester doesn't warn, the tested equipment no damage, no creepage.

14. Low impedance test

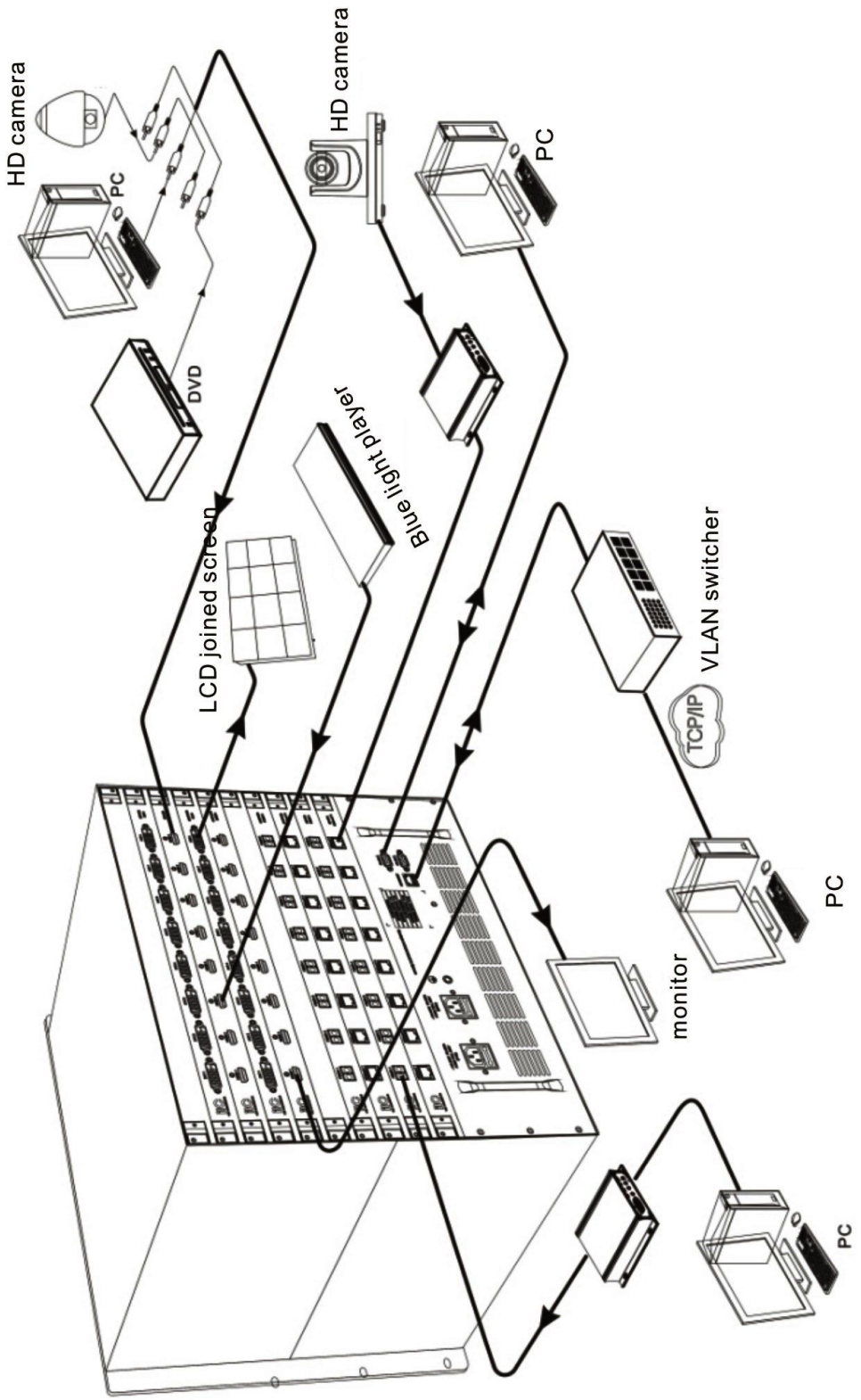
Use low impedance tester to test earthing resistance, the value should less than 0.1Ω.

15. System connection drawing

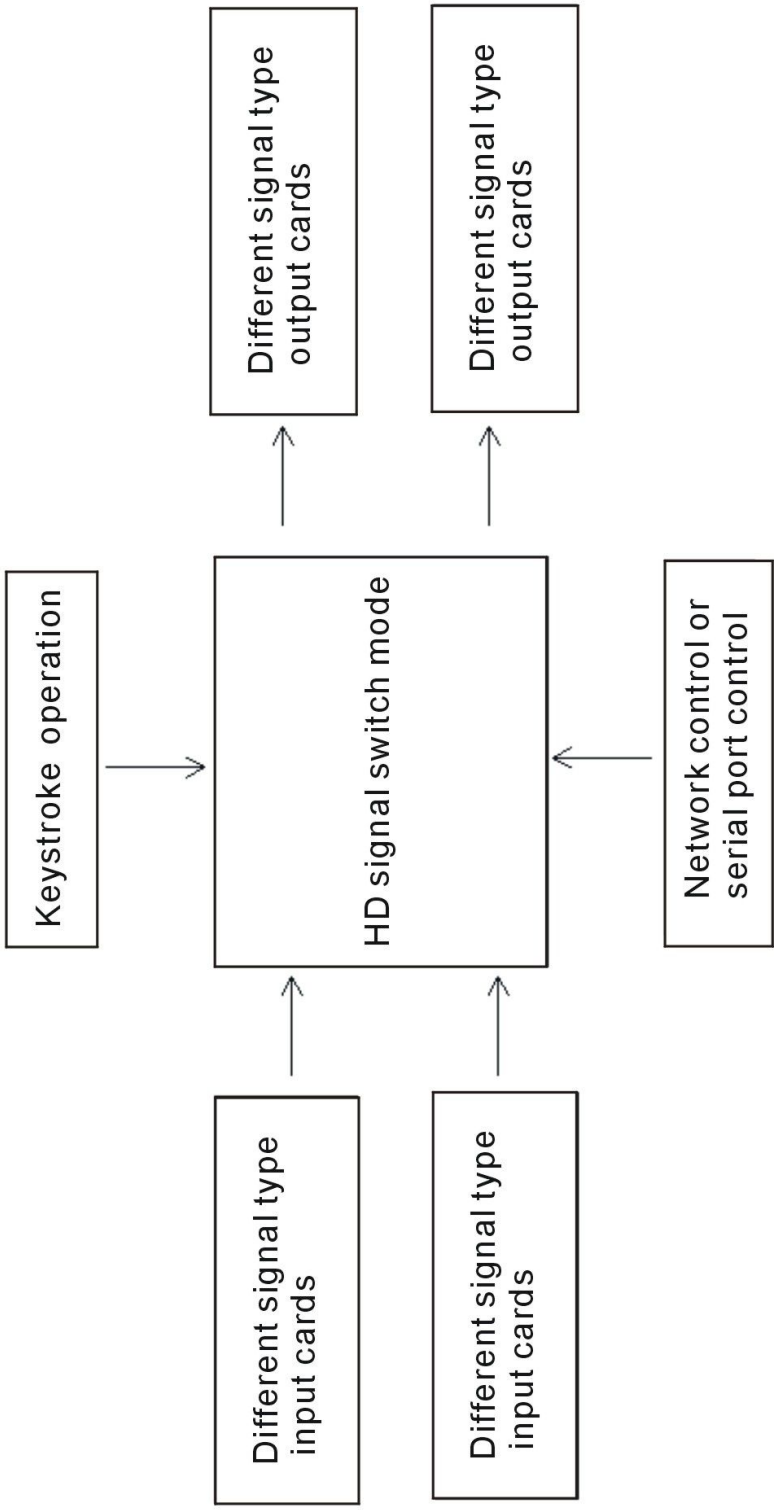
◆ TS-9208H



◆ **TS-9216H/TS-9232H**

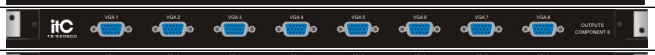


16. Theory block plan


Different signal type output cards
Different signal type output cards
Keystroke operation
HD signal switch mode
Network control or serial port control
Different signal type input cards
Different signal type input cards

17. Input, output board card specification

Board cards type

Model/name	outlook
TS-9208HR input board card	
TS-9208DR input board card	
TS-9208CR input board card	
TS-9208SR input board card	
TS-9208GR input board card	
TS-9208TR input board card	
TS-9208HC output board card	
TS-9208DC output board card	
TS-9208CC output board card	
TS-9208SC output board card	
TS-9208GC output board card	
TS-9208TC output board card	
Blank card	

18. Input board card

◆ TS-9208HR input board card functions

- 8-channel HDMI-A parent interface input.
- The input longest substance: 20M.
- Support EDID edition function.
- Compatible with HDMI1.4 standard, HDCP1.3 agreement, DVI1.0 agreement.
- The largest supported resolving capability:HDPC: 1920x1200P@60_24bit.
  HDTV: 1920x1080P@60_36bit.
- Plug and Play; easy to use.

◆ TS-9208DR input board card functions

- 8-channel HDMI-A parent interface input.
- The input longest substance: 20M.
- Support EDID edition function.
- Compatible with HDMI1.4 standard, HDCP1.3 agreement, DVI1.0 agreement.
- The largest supported resolving capability:HDPC: 1920x1200P@60_24bit.
  HDTV: 1920x1080P@60_36bit.
- Plug and Play; easy to use.

◆ TS-9208CR input board card functions

- 8-Channel DB15 interface input.
- Select any signal input of VGA,CVBS,YPbPr,S-Video.
- HDPC: 1920x1200P@60_24bit.

  HDTV: 1920x1080P@60_36bit.
- Input the max supporting resolution ratio: HDPC: 1920x1200P@60_24bit.

  HDTV: 1920x1080P@60_36bit.
- Times cable output resolution ratio max at 1920x1080P@60Hz.
- Plug and Play; easy to use.

◆ TS-9208SR input board card functions

- 8-Channel BNC female interface input.
- Supporting SD-SDI, HD-SDI and 3G-SDI AV mode.
- Supporting SMPTE 425M, SMPTE 424M, SMPTE 292M, SMPTE 259M-C, DVB-ASI protocols.
- Maximum solution up to 1080P; HDTV compatible.
- Plug and Play; easy to use.

◆ TS-9208GR input board card functions

- 8-Channel optical signal input.
- Maximum solution up to 1080P.
- LC single chip and single mode technology with a maximum transporting distance of 20km.
- Full digital zero compression technology; high-performance signal transportation.
- Maximum input solution: HDPC: 1920x1200P@60_24bit.

  HDTV: 1920x1080P@60_36bit.
- Plug and Play; easy to use.

◆ TS-9208TR input board card functions

- 8-line high-speed RJ45 interface input.
- Adopting CAT5e/6 cable input with the max distance at 100M.
- Pixel bandwidth: 225MHZ, full digital.
- Interface bandwidth: 3.25Gbps, full digital (Each color is 3.25Gbps).

● Supporting EDID function.

● Compatible HDBaseT protocol.

● Max supporting resolution ratio: HDPC:1920X1200P@60_24bit,

HDTV:1920x1080p@60_36bit.

● Plug and Play; easy to use.

18.2 Output board card

◆ TS-9208HC output board card functions

● 8-Channel HDMI-A interface output.

● The input longest substance: 20M.

● Pixel bandwidth: 225MHz, full digital.

● Interface bandwidth: 3.25Gbps, full digital(Each color is 3.25Gbps).

● Supporting EDID function.

● Max supporting resolution ratio: HDPC:1920x1200P@60_24bit.

HDTV:1920x1080p@60_36bit.

● Plug and Play; easy to use.

◆ TS-9208DC output board card functions

● 8-Channel DVI-D interface output.

● The input longest substance: 20M.

● Pixel bandwidth: 225MHz, full digital.

● Interface bandwidth: 3.25Gbps, full digital(Each color is 3.25Gbps).

● Supporting EDID function.

● Max supporting resolution ratio: HDPC:1920x1200P@60_24bit.

HDTV:1920x1080p@60_36bit.

● Plug and Play; easy to use.

◆ TS-9208CC output board card functions

● 8-line DB15 interface output.

● Any signal of VGA, CVBS and YPbPr can be selected.

● Maximum input solution: HDPC: 1920x1200P@60_24bit.

HDTV: 1920x1080P@60_36bit.

● Maximum solution of fold line output (can be set) up to 1920x1080P@60Hz.

● Plug and Play; easy to use.

◆ TS-9208SC output board card functions

● 8-way BNC female interface input.

● Supporting SD-SDI, HD-SDI and 3G-SDI AV mode.

● Supporting SMPTE 425M, SMPTE 424M, SMPTE 292M, SMPTE 259M-C, DVB-ASI protocols.

● Maximum solution up to 1080P; HDTV compatible.

● Plug and Play; easy to use.

◆ TS-9208GC output board card functions

● 8-Channel optical signal input.

● Maximum solution up to 1080P.

● LC single chip and single mode technology with a maximum transporting distance of 20km.

● Full digital zero compression technology; high-performance signal transportation.

● Maximum input solution: HDPC: 1920x1200P@60_24bit.

HDTV: 1920x1080P@60_36bit.

● Plug and Play; easy to use.

◆ TS-9208TC output board card functions

● 8-Channel high speed RJ45 interface output.

● Adopting CAT5e/6 cable input max distance at 100M.

● Pixel bandwidth: 225MHZ, full digital.

● Interface bandwidth: 3.25Gbps, full digital(Each color is 3.25Gbps).

● Compatible HDBaseT protocol.

● Max supporting resolution ratio: HDPC:1920X1200P@60_24bit,

HDTV:1920x1080p@60_36bit.

● Plug and Play; easy to use.

18.3 Accessories for choice

◆ Blank card functions

● Blank, fill in the blank short section without the available audio & video frequency input/output.

◆ Power supply box functions

● International universal all scopes AC input (AC ~100V-240V 50-60Hz);

● AC in burst current suppression circuit;

● With short circuit/overload/over voltage/over temperature protection functions;

● Offer system internal+5V (425W), +12V (480W) power;

● Support power source redundant cold backup, switch fast on spot.

19. Specifications

TS-9208HR

Model	TS-9208HR
Interface	8-channel HDMI-A parent interface input
Agreement	Support HDMI1.4 agreement, HDCP1.3 agreement, DVI1.0 agreement.
Pixel bandwidth	225MHz,full digital
Connector bandwidth	3.25Gbps, full digital
The largest supported resolving capability	HDPC:1920x1200p@60_24bit; HDTV:1920x1080P@60_36bit; Normal-PC:1600x1200p@60_24bit
Clock Jitter	<0.15T bit
Rise time	<0.3Tbit (20%-80%)
Fall time	<0.3Tbit (20%-80%)
Interface	8-channel HDMI-A parent interface
Signal strength	T.M.D.S.+/-0.4vpp
The minimum/maximum level	T.M.D.S.2.9V/3.3V
EDID	An optional default read EDID and function
The maximum error of the dc bias	15mV
Recommended maximum input/output range	Input is less than 20M, in 1920x1200@60 (it is recommended to use certified HDMI special wire, such as Model TM x wire
product weight	About 0.5Kg
Power consumption	12W

TS-9208HC

Model	TS-9208HC
Interface	8-channel HDMI-A parent interface input
Agreement	Support HDMI1.4 agreement, HDCP1.3 agreement, DVI1.0 agreement.
Pixel bandwidth	225MHz,full digital
Connector bandwidth	3.25Gbps, full digital
The largest supported resolving capability	HDPC:1920x1200p@60_24bit; HDTV:1920x1080P@60_36bit; Normal-PC:1600x1200p@60_24bit
Clock Jitter	<0.15T bit
Rise time	<0.3Tbit (20%-80%)
Fall time	<0.3Tbit (20%-80%)
Interface	8-channel HDMI-A parent interface
Signal strength	T.M.D.S.+/-0.4vpp
The minimum/maximum level	T.M.D.S.2.9V/3.3V
EDID	An optional default read EDID and function
The maximum error of the dc bias	15mV
Recommended maximum input/output range	output is less than 20M, in 1920x1200@60 (it is recommended to use certified HDMI special wire, such as Model TM x wire
product weight	About 0.5Kg
Power consumption	10W

TS-9208DR

Model	TS-9208DR
Interface	8-channel DVI-D Input board card
Agreement	Support HDMI1.4 agreement, HDCP1.3 agreement, DVI1.0 agreement
Pixel bandwidth	225MHz,full digital
Connector bandwidth	3.25Gbps, full digital
The largest supported resolving capability	Normal-PC:1600x1200P@60_24bit, HDPC:1920x1200P@60_24bit, HDTV:1920x1080P@60_36bit,
Clock Jitter	<0.15T bit
Rise time	<0.3Tbit (20%-80%)
Decline in time	<0.3Tbit (20%-80%)
Signal strength	T.M.D.S.+/-0.4pp
The minimum/maximum level	T.M.D.S.2.9V/3.3V
EDID	An optional default read EDID and function
The maximum error of the dc bias	15mV
Recommended maximum input/output range	Input is less than 20M, in 1920x1200@60 (it is recommended to use certified DVI special wire, such as Model TM x wire
Product weight	About 0.5Kg
Power consumption	12W

TS-9208DC

Model	TS-9208DC
Interface	8-channel DVI-D Input board card
Agreement	Support HDMI1.4 agreement, HDCP1.3 agreement, DVI1.0 agreement
Pixel bandwidth	225MHz,full digital
Connector bandwidth	3.25Gbps, full digital
The largest supported resolving capability	Normal-PC:1600x1200P@60_24bit, HDPC:1920x1200P@60_24bit, HDTV:1920x1080P@60_36bit,
Clock Jitter	<0.15T bit
Rise time	<0.3Tbit (20%-80%)
Decline in time	<0.3Tbit (20%-80%)
Signal strength	T.M.D.S.+/-0.4pp
The minimum/maximum level	T.M.D.S.2.9V/3.3V
EDID	An optional default read EDID and function
The maximum error of the dc bias	15mV
Recommended maximum input/output range	Input is less than 20M, in 1920x1200@60 (it is recommended to use certified DVI special wire, such as Model TM x wire
Product weight	About 0.5Kg
Power consumption	10W

TS-9208CR

Model	TS-9208CR
Interface	8-Channel DB15 interface input
Selective output resolution ratio	800 x 600@60Hz; 1024 x 768@60Hz;
	1280 x 720P@60Hz; 1280 x 800@60Hz;
	1280 x 1024@60Hz; 1366 x 768@60Hz;
	1440 x 900@60Hz; 1400 x 1050@60Hz;
	1600 x 900@60Hz; 1600 x 1200@60Hz;
	1680 x 1050@60Hz; 1920 x 1080P@60Hz ;
Max consumption	50W
Product weight	1.2kg
CV Composite video CV	
Gain	0dB
Bandwidth	150MHz @ -3dB
Differential phase error	0.1°, 3.58-4.43 MHz
Differential gain error	0.1% , 3.58-4.43 MHz
Signal strength	1Vpp: Composive vedio (CVBS)
Mini/max electrical level	Analog signal: -2V/+2V
Input impedance	75Ω
Return Loss	<-30dB@5MHz
Y/C Video frequency	
Gain	0dB
Bandwidth	150MHz @ -3dB
Differential phase error	0.1°, 3.58-4.43 MHz
Differential gain error	0.1% , 3.58-4.43 Mhz
Signal strength	1Vpp: S Terminal video(Y/C)
Mini/max electrical level	Analog signal: -2V/+2V
Input impedance	75Ω
Return Loss	<-30dB@5MHz
Component video YPbPr	
Gain	0dB
Bandwidth	350MHz @ -3dB
Differential phase error	0.1°, 3.58-4.43 MHz
Differential gain error	0.1%, 3.58-4.43 MHz
Signal strength	1Vpp: (Component video Y)
	0.3Vpp: (Component video Pb Pr/CbCr)

Mini/max electrical level	Analog signal: -2V/+2V
Input impedance	75Ω
Return Loss	<-30dB@5MHz
VGA video	
Gain	0dB
Bandwidth	380 MHZ
Signal strength	0.63Vpp to 0.9 Vpp
Mini/max electrical level	RGB signal: 0V/1.0V
	HV signal: 0V/5.0V
input impedance	75Ω
Return Loss	<-30dB@5MHz

TS-9208CC

Model	TS-9208CC
Interface	8-line DB15 output interface
CV	
Gain	0dB
Bandwidth	150MHz @ -3dB
Differential Phase Error	0.1°, 3.58-4.43 MHz
Differential Gain Phase Errors	0.1% , 3.58-4.43 MHz
Signal Strength	1Vpp: Composite Video (CVBS)
MIN/MAX Level	Analogue signal: -2V/+2V
Input Impedance	75Ω
RL (Return Loss)	<-30dB@5MHz
YPbPr	
Gain	0dB
Bandwidth	350MHz@-3dB
Differential Phase Error	0.1%, 3.58-4.43 MHz
Differential Gain Phase Errors	0.1%, 3.58-4.43 MHz
Signal Strength	1Vpp: (Component Video: Y)
	0.3Vpp: (Component Video: Pb Pr/CbCr)
MIN/MAX Level	Analogue signal: -2V/+2V
Input Impedance	75Ω
RL (Return Loss)	<-30dB@5MHz
VGA	
gain	0dB
Bandwidth	380 MHZ
Signal Strength	0.63Vpp to 0.9 Vpp
MIN/MAX Level	RGB signal: 0V/1.0V
	HV signal: 0V/5.0V
Input Impedance	75Ω
RL (Return Loss)	<-30dB@5MHz

TS-9208SR

Model	TS-9208SR
Interface	Support 8-Channel BNC female interface input
Audio &video input	
Supported Protocols	SMPTE 425M, SMPTE 424M, SMPTE 292M,
	SMPTE 259M-C, DVB-ASI
Pixel bandwidth	2.970Gb/s, 2.970/1.001Gb/s, 1.485Gb/s,
	1.485/1.001G/bs, 270Mb/s
Maximum resolution	1920x1080P@60
Input return loss	<-14dB @1MHz~1.5GHz
Output return loss	<-12dB @1MHz~1.5GHz
Internal HDMI audio &video input	
Supported Protocols	Support HDMI1.3 standard, HDCP1.3 protocol,
	DVI1.0 agreement
Pixel bandwidth	165MHz, full-digital
Interface bandwidth	3.25Gpbs
Maximum input resolution	HDPC: 1920x1200P@60_24bit;
	HDTV: 1920x1080P@60_36bit
Supported internal output resolution	800X600@60Hz; 1024X768@60Hz;
	1280X720@60Hz; 1280X1024@60Hz;
	1280x768@60Hz; 1600x1200@60Hz;
	1600X1200@60Hz; 1920X1080P@60Hz;
	1920X1200P@60Hz; 1920x1200@60Hz;
Maximum Power Consumption	13W
Weight	1.4Kg

TS-9208SC

Model	TS-9208SC
Interface	Support 8 channel BNC female interface output
Internal HDMI audio &video input	
Supported Protocols	Support HDMI1.3 standard, HDCP1.3 protocol,
	DVI1.0 agreement; HDBaseT protocol
Pixel bandwidth	165MHz, full-digital
Interface bandwidth	3.25Gpbs
Internal maximum resolution	1920x1080P@60
SDI audio &video output	
Supported Protocols	SMPTE 425M, SMPTE 424M, SMPTE 292M,
	SMPTE 259M-C, DVB-ASI
Pixel bandwidth	2.970Gb/s, 2.970/1.001Gb/s, 1.485Gb/s,
	1.485/1.001G/bs, 270Mb/s
Supported resolution	1280X720@25HZ; 1280X720@30HZ;
	1280X720@50HZ; 1280X720@60HZ;
	1920X1080@24HZ; 1920X1080@25HZ;
	1920X1080@30HZ; 1920X1080@50HZ;
	1920X1080@60HZ;
Maximum output resolution	1920X1080@60
Maximum Power Consumption	13W
Weight	1.4Kg

TS-9208GR

Model	TS-9208GR
Input	8-Channel fiber signal (single code)
Input connector	8-Channel SPF fiber connector
Transmission power	-5dB (standard)
Maximum Consumption	13dB
Wavelength	Multimode 850nm/Single Mode: 1310-1620nm(Alternative)
Multimode fiber spec.	50/125μm
Single-mode fiber spec.	9/125μm
Interface bandwidth	3.25Gbps, full-digital
Clock Jitter	<0.15 Tbit
Rise time	<0.3Tbit (20%--80%)
Fall time	<0.3Tbit (20%--80%)
Maximum output distance	OM3 Multimode fiber: Less than 300M Single-mode
	fiber:2-20KM in 1920x1080p@60
Maximum Power Consumption	15W
Weight	1.5Kg

TS-9208GC

Model	TS-9208GC
Output	8-Channel fiber signal (single code)
Output connector	8-Channel SPF fiber connector
Transmission power	-5dB(standard)
Maximum Consumption	13dB
Wavelength	Multimode 850nm/Single Mode: 1310-1620nm(Alternative)
Multimode fiber spec.	50/125μm
Single-mode fiber spec.	9/125μm
Interface bandwidth	3.25Gbps, full-digital
Clock Jitter	<0.15 Tbit
Rise time	<0.3Tbit (20%--80%)
Fall time	<0.3Tbit (20%--80%)
Maximum output distance	OM3 Multimode fiber :Less than 300M
	Single-mode fiber:2-20KM in 1920x1080p@60
Maximum Power Consumption	15W
Weight	1.5Kg

TS-9208TR

Model	TS-9208TR
Interface	8-Channel high-speed RJ45 interface input
Protocol	HDBaseT protocol
Pixel bandwidth	225MHz, full digital
Port bandwidth	3.25Gbps,full digital
Max supporting resolution ratio	Normal-PC: 1600x1200@60_24bit
	HDPC: 1920x1200P@ 60_24bit
	HDTV: 1920x1080P@60_36bit
Signal type	HDBaseT protocol high-speed differential signal
Max consumption	40W
Proposal max input distance	The max 100 meters, at 1920x1080p@60Hz
	(Recommend to use CAT5e/6/7 dedicated cables)
Product weight	About 1KG

TS-9208TC

Model	TS-9208TC
Interface	8-Channel high speed RJ45 interface output
Pixel bandwidth	225MHz, full digital
Interface bandwidth	3.25Gbps,full digital
Max supporting resolution ratio	Normal-PC: 1600x1200@60_24bit
	HDPC: 1920x1200P@ 60_24bit
	HDTV: 1920x1080P@60_36bit
Signal type	HDBaseT protocol high speed differential signal
Max consumption	21W
Proposal max input distance	Max distance at 100 meters, at 1920x1S080p@60Hz
	(recommend to use CAT5e/6/7 dedicated cables)
Product weight	About 1Kg

TS-9208H

Model	TS-9208H
Connector	
Input cards quantities	1
Output cards quantities	1
Input channel	8
Output cards quantities	8
Inserted input cards model	TS-9208HR/TS-9208DR/TS-9208CR/ TS-9208TR/TS-9208GR/TS-9208SR
Inserted output cards model	TS-9208HC/TS-9208DC/TS-9208CC/ TS-9208TC/TS-9208GC/TS-9208SC
Connector bandwidth	3.25Gbps, full Digital
Serial port control	
Number	2
Serial port control connector	RS-232
Baud rate and protocol	Baud rate:9600,data bits:8bits, stop bit:1,without parity check bits
Serial port model	2=TX,3=RX,5=GND
Ethernet control	
Ethernet control connector	RJ-45
Ethernet control protocol	TCP/IP
Ethernet control rate	Self-adaption 10M/100M, full duplex or half-duplex
standard	
power	AC ~100V-240V, 50-60Hz
maximum power	107W
weight	6.3Kg
Temperature	-20℃~+70℃
humidity	10%-90%
Rack size	3U
Mean Time Between Failure (MTBF)	30,000 hours
Size(mm)	484(L)*354(W)*132(H)

TS-9216H

Model	TS-9216H
Connector	
Input cards quantities	2
Output cards quantities	2
Input channels	16
Output channels	16
Inserted input cards model	TS-9208HR/TS-9208DR/TS-9208CR/ TS-9208TR/TS-9208GR/TS-9208SR
Inserted output cards model	TS-9208HC/TS-9208DC/TS-9208CC/ TS-9208TC/TS-9208GC/TS-9208SC
Connector bandwidth	3.25Gbps, full digital
Serial port control	
Number	2
Serial port control connector	RS-232
Baud rate and protocol	Baud rate:9600,data bits:8,stop bit:1,without parity check bits
Serial port model	2=TX,3=RX,5=GND
Ethernet control	
Ethernet control connector	RJ-45
Ethernet control protocol	TCP/IP
Ethernet control rate	self-adaption 10M/100M, full duplex or half-duplex
standard	
power	AC100V-240V,50/60HZ,
maximum power	107W
weight	10.3Kg
Temperature	-20℃~+70℃
humidity	10%-90%
Rack size	5U
Mean Time Between Failure (MTBF)	30,000 hours
Size(mm)	484(L)*354(W)*220(H)

TS-9232H

Model	TS-9232H
connector	
Input cards quantities	4
Output cards quantities	4
Input channels	32
Output channels	32
Inserted input cards model	TS-9208HR/TS-9208DR/TS-9208CR/ TS-9208TR/TS-9208GR/TS-9208SR
Inserted output cards model	TS-9208HC/TS-9208DC/TS-9208CC/ TS-9208TC/TS-9208GC/TS-9208SC
Connector bandwidth	3.25Gbps, full digital
Serial port control	
Number	2
Serial port control connector	RS-232
Baud rate and protocol	Baud rate:9600,data bits:8,stop bit:1,without parity check bits
Serial port model	2=TX,3=RX,5=GND
Ethernet control	
Ethernet control connector	RJ-45
Ethernet control protocol	TCP/IP
Ethernet control rate	self-adaption 10M/100M, full duplex or half-duplex
standard	
power	AC100V-240V,50/60HZ,
maximum power	107W
weight	20Kg
Temperature	-20℃~+70℃
humidity	10%-90%
Rack size	10U
Mean Time Between Failure (MTBF)	30,000 hours
Size(mm)	484(L)*354(W)*440(H)